Stanford MEDICINE | Internal Medicine

# Research Interest Group Newsletter

SUMMER | VOLUME 8 | ISSUE 2 | 2022-2023

## Welcome!

Dear colleagues,

Welcome to the Summer 2023 edition of our medicine residency research newsletter!

This publication is aimed at both highlighting our residents' exciting projects as well as informing trainees and recruits about the scholarly work taking place at Stanford. We define research comprehensively, including scholarly work done in quality improvement, global health, outcomes research, medical education, clinical investigation, translational research, implementation science, qualitative studies, clinical trials, and device/service innovation.

This cycle, we're also focusing on highlighting one of our residents to share a bit more about their own research experience in residency, as well as some quick tips from a faculty mentor for residents looking to be more involved in research!

## Resident Spotlight ✨

**Chen Wei, MD, MBA**

***Chen, tell us about yourself!***

I'm a big city person—I grew up in NYC and finally learned to drive before moving out here for residency. I love good food and traveling for good food (the driving now helps!). My weakness is French fries—I will always order them if they're on the menu. Prior to medical school, I did several years of wet lab research modeling oncogenic mutations in leukemia. Subsequently, I got a MD-MBA and worked across disciplines at HBS and HMS on value-based care delivery and pricing new technologies. I worked at a biotech VC called Vida Ventures and medical device venture studio called Coridea. My current work focuses on understanding drivers of price variation in hospital services and how this contributes to excess healthcare spending and inequity. Following residency, I plan to build a career at the juncture of clinical cardiology, health policy, and innovation.

***Quite the journey you've had! What part of your current work excites you the most?***

For the first time, we now have access to massive amounts of data regarding how much hospitals charge insurance companies and how much of this gets passed on to patients. This is because of the Federal Price Transparency Rule, which went into effect in 2021. I am currently working with Kevin Schulman and Alexander Sandhu (and a couple interns!) to study how this newfound price transparency can shed light on the inner workings of a healthcare marketplace that is at once, abstruse, inefficient, and often unfair. For example, can you believe that there's up to 15-fold price variation in sigmoidoscopies across hospitals? Or 2-fold variation

across CABG prices at the same hospital but just with different insurance plans? These are all signs of a healthcare market that can do better for its patients and we're trying to figure out what levers policymakers can pull on to reduce price variation, curb spending, and promote value. If you're at all interested in value-based care and disparities research from the lens of health economics, please reach out!

***Very impressive, Chen - and way to involve other residents! Do you have any tips for those looking to be involved with research?***

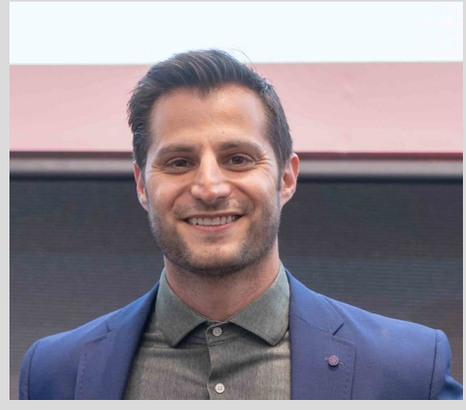
It's incredible how much we're asked to juggle in residency and research is only one of those commitments! To that end, here are a couple of tips that are hopefully helpful:

1. Finding a good mentor often means balancing mentor bandwidth with reputation/resources. It's not always a trade-off--it can be helpful to look for a J-curve in a mentor's publication track record, which is when someone's publication count begins rapidly increasing year-over-year. The idea is you want someone who is publishing a lot but still very incentivized to provide a lot of support.
2. It's always helpful to ask your co-residents who they've worked with. When talking with potential mentors, don't be afraid to ask them who they've mentored and what that mentorship has led to.
3. Find something and someone interesting! Stanford is a big place and you're bound to find someone whose interest converges with yours. I was the one who proposed my research to my mentors and it was after reading a New York Times article.

# Faculty Corner

*We asked Andre Kumar, the winner of our Resident Research Mentor Award this past spring during our 5th Annual Research Symposium, on more advice for those looking to become more involved in a research project. But first, a little about Dr. Kumar.*

Andre Kumar is a Clinical Associate Professor in the Stanford Division of Hospital Medicine with a passion for improving patient care through Point-of-Care Ultrasound (POCUS), clinical research, and education. He received my MD degree from Tulane University and completed his residency and chief residency in internal medicine here at Stanford. As a resident, he co-founded the SHAPE Program (our hospitalist training track), which he continues to lead to this day. Following residency, he completed a Master's in Education at Stanford and the Rathmann Foundation Fellowship in Medical Education. He is driven by the possibilities of applying educational theory and research toward improving the training of the next generation of physicians.



**Andre Kumar, MD, MEd**

**Why did you decide to make research & mentorship a part of your career?**

The most important trait I look for in a trainee is persistence. Finishing what you start is a key part of research success. There is nothing better than watching those you have mentored succeed and grow beyond what you alone could achieve. That is my ethos and goal for being a mentor, and I strive to instill the same passion, wonder, and drive that my mentors placed in me when I was starting out in research. If we are to improve clinical care, our

**What research topics are you finding most interesting currently?**

I'm currently focusing on two major endeavors: POCUS and Long-COVID. I have several active studies related to POCUS learning and patient outcomes (including a multi-institutional study). I am also a PI for the NIH's RECOVER-VITAL and RECOVER trials, which look at the underlying pathophysiologic basis for long-COVID and potential treatments that could be offered. In addition, I have several side projects related to medical education (how experts and novices

**What are your tips to residents interested in pursuing a career that involves research?**

First, it's totally ok if you've never written a paper, never collected a batch of data, or even engaged in a research study. That doesn't mean you aren't cut out for research. I've come to learn that it is something that grows over time, so try dabbling in 1-2 projects in residency that genuinely interest you. If you are further along and already have a project, do everything you can to finish it. Even if it isn't in your field or your interests have changed, there is a lot to learn from starting and finishing your project (including how to navigate the publication process). Finally, if you are almost done with a project and are struggling to get it published, know that you are not alone and this does NOT define you or your study. One of my papers in intern year was rejected 5 times by different journals before it was finally sent off for reviewer

training environment, and our profession as a whole, we need strong mentors to guide the next group of individuals along this path. I am driven to become one as well!

conceptualize goals of care discussions, inequities in training evaluations for women and URM physicians, and Chat-GPT's impact on learning). It's been a busy couple of years for me!

feedback. After that, it took 9 months to finally get the edits right to submit it. To this day, it is one of my most cited articles and I still get correspondence regarding it once a month. Sometimes the editors have a hard time seeing a diamond in the rough, so believe in yourself and your work.

## Scholarly Work

Congratulations to the following residents for showcasing their research over the last few months! Below are the 29 posters, podium presentations, and publications (and likely more not being reported!) that you've reported and we've found on Pubmed* over last 6 months.

Lee, M.-C., **Bartuska, A.**, Chen, J., Kim, R. K., Jaradeh, S., & Mihm, F. (2023). Stellate ganglion block catheter for paroxysmal sympathetic hyperactivity: calming the “neuro-storm.” *Regional Anesthesia and Pain Medicine*. https://doi.org/10.1136/rapm-2023-104399

**Chiang, R. S.**, Desai, A., Glover, M. J., Hui, G., Ramchandran, K. J., Wakelee, H., Lythgoe, M. P., & Khaki, A. R. (2023). Racial diversity and reporting in United States food and drug administration registration trials for thoracic malignancies from 2006 to 2020. *Cancer Investigation*, *41*(1), 43–47.

Le, A. T., Wu, M., Khan, A., Phillips, N., Rajpurkar, P., **Garland, M.**, Magid, K., Sibai, M., Huang, C., Sahoo, M. K., Bowen, R., Cowan, T. M., Pinsky, B. A., & Hogan, C. A. (2022). Targeted plasma metabolomics combined with machine learning for the diagnosis of severe acute respiratory syndrome virus type 2. *Frontiers in Microbiology*, *13*, 1059289.

**Gomez, S. E.**, Parizo, J., Ermakov, S., Larson, J., Wallace, R., Assimes, T., Hlatky, M., Stefanick, M., & Perez, M. V. (2023). Evaluation of the association between circulating IL-1β and other inflammatory cytokines and incident atrial fibrillation in a cohort of postmenopausal women. *American Heart Journal*, *258*, 157–167.

**Hasty, A.**, **Joshi, M.**, Lee, D., & Mannis, G. N. (2023). Leukostasis-induced digital ischemia. *EJHaem*, *4*(2), 497–498.

**Joshi, M.**, Melo, D. P., Ouyang, D., Slomka, P. J., Williams, M. C., & Dey, D. (2023). Current and future applications of artificial intelligence in cardiac CT. *Current Cardiology Reports*, *25*(3), 109–117.

Brotherton, B. J., **Joshi, M.**, Otieno, G., Wandia, S., Gitura, H., Mueller, A., Nguyen, T., Letchford, S., Riviello, E. D., Karanja, E., & Rudd, K. E. (2023). Association of clinical prediction scores with hospital mortality in an adult medical and surgical intensive care unit in Kenya. *Frontiers in Medicine*, *10*, 1127672.

Baron S.J., Lee C.I., **Juthani P.**, & Tyagi S. (Eds). Lange Flashcards: Pharmacology. *5th Edition*. New York, NY: McGraw-Hill, 2023; in press.

**Karhu E.**, Nguyen L., Sun S., & Gardner C. P51 - The Effect of a Plant-Based Nutritional Supplement on Symptoms and Calorie- and Protein-Deficits in Patients With Gastroparesis. GI and Other Nutrition and Metabolic-Related Topics Poster Abstracts. ASPEN Nutrition Science & Practice Conference: April 20-23, 2023 (Las Vegas, NV). JPEN J Parenter Enteral Nutr. 2023 April;47(S71-246): S127-128 https://doi.org/10.1002/jpen.2491

**Kim, D. S.** (2023a). ATAC-seq data processing. *Methods in Molecular Biology (Clifton, N.J.)*, *2611*, 305–323.

**Kim, D. S.** (2023b). Deep learning on chromatin accessibility. *Methods in Molecular Biology (Clifton, N.J.)*, *2611*, 325–333.

Thrane, K., Winge, M. C. G., Wang, H., Chen, L., Guo, M. G., Andersson, A., Abalo, X. M., Yang, X., **Kim, D. S.**, Longo, S. K., Soong, B. Y., Meyers, J. M., Reynolds, D. L., McGeever, A., Demircioglu, D., Hasson, D., Mirzazadeh, R., Rubin, A. J., Bae, G. H., … Ji, A. L. (2023). Single-cell and spatial transcriptomic analysis of human skin delineates intercellular communication and pathogenic cells. *The Journal of Investigative Dermatology*. https://doi.org/10.1016/j.jid.2023.02.040

Sandhu, A. T., Zheng, J., Kalwani, N. M., Gupta, A., Calma, J., Skye, M., **Lan, R.**, Yu, B., Spertus, J. A., & Heidenreich, P. A. (2023). Impact of patient-reported outcome measurement in Heart Failure Clinic on clinician health status assessment and patient experience: A substudy of the PRO-HF trial. *Circulation. Heart Failure*, *16*(2), e010280.

Pasquini, L., Noohi, F., Veziris, C. R., Kosik, E. L., Holley, S. R., **Lee, A.**, Brown, J. A., Roy, A. R. K., Chow, T. E., Allen, I., Rosen, H. J., Kramer, J. H., Miller, B. L., Saggar, M., Seeley, W. W., & Sturm, V. E. (2023). Dynamic autonomic nervous system states arise during emotions and manifest in basal physiology. *Psychophysiology*, *60*(4), e14218.

**Lewinsohn, R.**, Zheng, Y., Rosenberg, S. M., Ruddy, K. J., Tamimi, R. M., Schapira, L., Peppercorn, J., Borges, V. F., Come, S., Snow, C., Ginsburg, E. S., & Partridge, A. H. (2023). Fertility preferences and practices among young women with breast cancer: Germline genetic carriers versus noncarriers. *Clinical Breast Cancer*, *23*(3), 317–323.

Thiel, C. L., **Mehta, N.**, **Sejo, C. S.**, Qureshi, L., Moyer, M., Valentino, V., & Saleh, J. (2023). Telemedicine and the environment: life cycle environmental emissions from in-person and virtual clinic visits. *Npj Digital Medicine*, *6*(1), 87.

**Moscvin, M.**, Liacos, C. I., Chen, T., Theodorakakou, F., Fotiou, D., Hossain, S., Rowell, S., Leblebjian, H., Regan, E., Czarnecki, P., Bagnoli, F., Bolli, N., Richardson, P., Rennke, H. G., Dimopoulos, M. A., Kastritis, E., & Bianchi, G. (2023). Mutations in the alternative complement pathway in multiple myeloma patients with carfilzomib-induced thrombotic microangiopathy. *Blood Cancer Journal*, *13*(1), 31.

**O'Donnell, C. T**., Fielding-Singh, V., & Vanneman, M. W. (2023). The Art of the Null Hypothesis-Considerations for Study Design and Scientific Reporting. *Journal of Cardiothoracic and Vascular Anesthesia*, *37*(6), 867–869.

Washington, G. C., **O'Donnell, C. T**., Madhok, J., Williams, K. M., & Hill, C. C. (2023). Use of methylene blue to treat vasoplegia syndrome in cystic fibrosis patients undergoing lung transplantation: A case series. *Annals of Cardiac Anaesthesia*, *26*(1), 36–41.

**Pannu, J.**, & Glenn, J. S. (2023). Programmable antivirals and just-in-time vaccines: Biosecurity implications of viral RNA secondary structure targeting. *Health Security*, *21*(1), 81–84.

**Pourzia, A. L**., Olson, M. L., Bailey, S. R., Boroughs, A. C., Aryal, A., Ryan, J., Maus, M. V., & Letai, A. (2023). Quantifying requirements for mitochondrial apoptosis in CAR T killing of cancer cells. *Cell Death & Disease*, *14*(4), 267.

**Somani, S.**, van Buchem, M. M., Sarraju, A., Hernandez-Boussard, T., & Rodriguez, F. (2023). Artificial intelligence-enabled analysis of statin-related topics and sentiments on social media. *JAMA Network Open*, *6*(4), e239747.

**Sossenheimer, P**., Hong, G., Devon-Sand, A., & Lin, S. (2023). Voice assistants' responses to questions about the COVID-19 vaccine: National cross-sectional study. *JMIR Formative Research*, *7*, e43007.

**St Martin, E. C**., Zhang, T. Y., & Mannis, G. N. (2023). The Goldilocks dilemma in AML: Too young and fit, but not young and fit enough. *Clinical Lymphoma, Myeloma & Leukemia*, *23*(6), 410–412.

Liang, E. C., Dekker, S. E., Sabile, J. M. G., **Torelli, S.**, Zhang, A., Miller, K., Shiraz, P., Hayes-Lattin, B., Leonard, J. T., & Muffly, L. (2023). Next-generation sequencing-based MRD in adults with ALL undergoing hematopoietic cell transplantation. *Blood Advances*. https://doi.org/10.1182/bloodadvances.2023009856

Weingarden, A. R., Treiger, O., **Ulsh, L.**, Limketkai, B., Goldenberg, D., Okafor, P., Sonu, I., Stollman, N., & Neshatian, L. (2023). Delivery of fecal material to terminal ileum is associated with long-term success of fecal Microbiota transplantation. *Digestive Diseases and Sciences*, *68*(5), 2006–2014.

**Wei, C.**, Fazal, M., Loh, A., Kapoor, R., Gomez, S. E., Shah, S., Rogers, A. J., Narayan, S. M., Wang, P. J., Witteles, R. M., Perino, A. C., Cheng, P., Rhee, J.-W., & Baykaner, T. (2023). Comparative arrhythmia patterns among patients on tyrosine kinase inhibitors. *Journal of Interventional Cardiac Electrophysiology: An International Journal of Arrhythmias and Pacing*. https://doi.org/10.1007/s10840-023-01575-z

**Witting, C.**, Azizi, Z., Gomez, S. E., Zammit, A., Sarraju, A., Ngo, S., Hernandez-Boussard, T., & Rodriguez, F. (2023). Natural language processing to identify reasons for sex disparity in statin prescriptions. *American Journal of Preventive Cardiology*, *14*, 100496.

Sarraju, A., Zammit, A., Ngo, S., **Witting, C.**, Hernandez-Boussard, T., & Rodriguez, F. (2023). Identifying reasons for statin nonuse in patients with diabetes using deep learning of electronic health records. *Journal of the American Heart Association*, *12*(7), e028120.

**Zehner, N.**, Polding, L., Faraci Sindra, V., & Shieh, L. (2023). Prospective pilot study of the Three Good Things positive psychology intervention in short-term stay hospitalised patients. *Postgraduate Medical Journal*, *99*(1170), 302–307.

**We created a little script in Python to scrape PubMed for all resident-related research (and manually combed through some matches to remove any false positive hits). Want to learn more about our code? Come join the coding sessions led by Matt, Sulaiman, and Andrew Moore!*

## Interested in Joining?

If you'd like to be more involved with the Research Interest Group, please don't hesitate to reach out to the current leaders:

Sulaiman Somani, R3, ssomani [at] stanford.edu

Jassi Pannu, R3, jassi [at] stanford.edu